Democratizing corruption: a role structure analysis of Indonesia's "Big Bang" decentralization

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Abstract

The study investigates to what degree Indonesia's large-scale decentralization and democratization changed corruption networks. A role structure approach is developed to move current analysis of dyad-level structures to the network level. This approach is empirically tested by comparing the relational content and third-party structures of 96 corruption networks operating in the first phase of decentralization (2001–2004), characterized by a powerful local council, with 94 corruption networks detected in the second phase (2005–2013), when direct local elections were introduced, and the power of the local council declined. Building on Fiske's relational model theory, it is argued and found that the local executive's reduced dependence on the local council provided the opportunity to initiate corrupt exchanges with a broader set of players both inside and outside the bureaucracy. Whereas deep dependence power relations (i.e. formal authority) remained important, an increasing proportion of corruption networks involved compound role structures characterized by both shallow (non-embedded profit and work relations) and deep interdependence (kin- and friendship). Furthermore, third party intermediaries became more important. Implications for the study of networks of corruption are discussed.

Keywords: Corruption, Relational models theory, Third party intermediaries, Role structures, Multiplexity, Decentralization, Institutional change

Introduction

With its simultaneous triple focus on political, fiscal, and administrative decentralization, Indonesia's decentralization program probably represents one of the most ambitious and comprehensive decentralization attempts ever conducted by a nation state. The World Bank describes it as a "radical and rapid" transformation from one of the most centralized to one of the most decentralized countries in the world. Hence, given its scope, ambition and pace, it almost reflects an ideal-typical case of a decentralization process. At the same time, though reducing the incidence of corruption was one of the explicit objectives of the decentralization project, corruption remains pervasive at both national and sub-national levels, and large numbers of local public leaders are

still indicted for corruption. Indonesia therefore provides an ideal to investigate the link between decentralization and corruption.

Containing corruption is one of several good governance objectives behind Indonesia's large-scale decentralization. But despite the shift of power to the local level, increased accountability of politicians to the local electorate (Fan et al. 2009; Fisman and Gatti 2002; Gaventa 2004), and intensified anti-corruption measures, corruption is still pervasive (Jemadu 2017; Kristiansen et al. 2009). In the period 2010–2014, the number of detected corruption cases increased from 448 to 629 per year (Ganie-Rochman and Achwan 2016). Once concentrated mainly at the central government level, corruption has now spread to the regional level, involving an increasing proportion of local public officials (Silitonga et al. 2016; Rinaldi et al. 2007).

These trends not only pose a major challenge for Indonesian policy makers and politicians. They are also a puzzle for the *economic incentives* perspective of formal institutions that underlies the good governance framework (Dixit 2015; Widmalm 2008). Here, institutions are mainly designed to discourage individuals—particularly elected officials or non-elected civil servants—from stealing public resources. Consequently, mitigating the unintended consequences of the reform requires further adjustments of good governance institutions at the national level, such as incentives to improve the effectiveness of monitoring and sanctioning.

In contrast, according to a *social embeddedness* perspective (Brass et al. 1998; Granovetter 2007; Warburton 2013), the key to model and combat corruption lies in the social relations in which they are embedded. It advocates shifting the focus from illicit acts committed by an individual to the multiple kinds of relations connecting two or more parties involved in a corruption case. Illicit economic transactions, in which profit comes from trading one kind of good or service (e.g., a bribe) in return for some other good or service (e.g., a favor), constitute only one element in a complex web of multiplex relationships, composed of kinship, friendship, coworking, and formal authority ties (Ganie-Rochman and Achwan 2016). Being important sources of interpersonal trust and moral obligations, but also of dependence, these social ties play a pivotal role in managing the risks involved in illicit transactions.

The importance of social embeddedness for risky economic actions, including corruption, is widely recognized (Granovetter 2005; Neudorfer and Neudorfer 2015). Indeed, many corrupt transactions are described in relational terms, like favoritism, clientelism, or collusion (Lambsdorff and Teksoz 2004; Neudorfer and Neudorfer 2015; Warburton 2013). Though previous embeddedness research has produced many valuable insights into the social-structural antecedents of corruption (Lawler and Hipp 2010), these studies face two major limitations. First, they focus on the impact of dyad-level variations in relational embeddedness on corrupt behavior, usually in a single network (Lawler and Hipp 2010). This precludes comparisons across different networks and contexts. Second, they are mainly concerned with the impact of networks on corrupt behavior. As a result, relatively little is known about the conditions that affect the formation and change of corruption networks themselves. The present study addresses this gap. Specifically, it seeks to answer the question of how the large-scale institutional changes that took place in Indonesia since the year 2001 affected the content and structure of social embeddedness of corruption at the network level.

Shifting the focus of analysis from the individual or dyad to the level of entire corruption networks raises several questions: *How to capture and explain variations in the structure and content of corruption networks? What do these corruption networks look like? How do their content and structure covary with changing institutional arrangements?*

In order to answer these questions, this study presents a role structure theory of corruption, and tests it using a unique dataset of 190 corruption networks, reported in Indonesia's newspapers in the period 2001–2013. Covering a variety of types of corruption in several government settings, it is a data resource allowing a systematic comparison of role structures across cases and over time.

The next section provides a short overview of current insights on social embeddedness and corruption. Section "A role structure approach to corruption" details the role structure approach to corruption. Section "Data and method" describes data and methods of analysis. Section "Role structures: descriptive results and case illustrations" presents the results of the role structure analyses, and the discussions and conclusions are presented in Sect. "Discussion and conclusions".

Social embeddedness and corruption

Corruption comes with risks, ranging from being cheated to the transaction being disclosed to the authorities (Lambsdorff 2002; Luo 2005). Social embeddedness is a way of managing risks, for example because social relations can be a source of interpersonal trust, moral obligation, and social control. The literature points to three types of embeddedness (Buskens et al. 2003) associated with corrupt transactions (Fredriksson 2014; Rothstein and Torsello 2013; Uribe 2014). They capture the *content* (relational embeddedness), the *structure* (structural embeddedness), and the *context* (institutional embeddedness) of social and economic relations.

With regard to *relational embeddedness*, four types of relations figure prominently in the study of corruption. One of the iconic examples of corruption is that civil servants ask or accept bribes from citizens, in return for doing the requested administrative act. This *market exchange* is emblematic because it resembles the classical one-shot economic market transaction between otherwise unrelated agents. A key aspect is that these exchanges are not socially embedded. Theories of relational embeddedness suggest, however, that rather than occurring between strangers, risky economic exchanges are likely to take place within an existing and ongoing social relation. These can be a formal hierarchical relationship between a superior and a subordinate (*clientelism*); a work relationship between peers occupying similar positions in a bureaucracy (*collusion*); or a strong kinship or friendship relation (*favoritism*) (Lambsdorff and Teksoz 2004).

Relational embeddedness stretching beyond such dyadic relations is called *structural embeddedness* and often involves third-party intermediaries. These may play a pivotal role in facilitating and sustaining corrupt exchanges. They can be part of a government agency, or the private sector, or operate as individuals (Della Porta and Vannucci 2016). Their strategic brokerage position may allow them to extract commissions for their services, from the briber, the bribe taker, or both (Burt 2004; Gould and Fernandez 1989).

Many studies have pointed to the impact of *institutional embeddedness* on corruption, emphasizing, among others, the role of cultural differences (Rothstein and Torsello

2013), legal frameworks (Lambsdorff and Teksoz 2004), informal norms and conventions (Della Porta and Vannucci 2016), or formal governance structures for incentivizing ethical behavior and monitoring and sanctioning illicit exchanges (Vannucci 2015). In line with this, political and administrative reforms as in the Indonesian case are a government's major tool to prevent corruption or mitigate its consequences.

A social embeddedness approach to corruption based on these three dimensions faces three distinct challenges. First, it needs to consider the *interrelationship* between different forms of embeddedness. This includes conceptualizing social ties as multiplex, but also extends to the interplay between institutional embeddedness on the one hand, and relational and structural embeddedness on the other.

Second, the degree to which a personal social network facilitates or impedes illicit transactions depends not only on someone's direct relations, but also on the pattern of indirect connections. Some network configurations may safeguard illicit and covert transactions better than others (Uribe 2014). The effectiveness of reforms is likely to vary with the social networks that connect the players in a specific corruption case. As an abundant body of social network research has shown, *third-party intermediaries* may be fundamental to enabling and sustaining systems of illicit exchange. Their potential roles are diverse. Third parties can bring together demand and supply for corrupt exchanges by acting as linking pins between otherwise disconnected parties. They can operate as trusted safeguards for illicit transactions in situations where uncertainty about exchange partners is high. Or they can be an important element in social control processes as they flourish in close-knit social structures.

Third, the unintended consequences of good governance reforms can only be fully understood by comparing the structural dynamics at the level of entire corruption networks. Such a comparison of network configurations requires abstracting from the particular dyadic or triadic exchange relations between individuals in a specific setting to the relations between positions in general *role structures* (Mandel 1983; Marsden 2017; White and Reitz 1983).

The present study has two aims. First, it describes the structure and content of corruption networks across a wide set of corruption cases in Indonesia. Second, it assesses how the processes of decentralization and democratization in the post-Suharto era affected these networks.

A role structure approach to corruption

A key tenet of role structure approaches is that the main driver of individual action is the person's position in a social structure. Individuals occupying similar positions in this structure are likely to face similar opportunities and constraints, and therefore engage in similar kind of behavior.

Most corruption studies carried out from a structuralist perspective are typically limited to a single type of relational content and remain restricted to the dyadic or triadic level. Role structure analysis allows us to incorporate multiplex relational content and structure at the network level. Roles are "regular patterns in the relations between social positions" (Scott et al. 1996).

The remainder of this section explicates key assumptions on relational and structural embeddedness that form the basis for a theoretical typology of role structures.

Table 1 Relational model theory and the degree of dependence relations in corruption. *Source*: Adapted from Fiske (1991) and Ryan and Blois (2016)

		Interdependence of the parties in the relationship	
		Shallow ⟵ ⟶ Deep	
Commitment of parties in the relationship to each other	Shallow	Corruption as a non-embedded profit relation - Relational Model: Market Pricing (MP) - Risk: unreliability & indiscretion	Corruption embedded in hierarchical authority relations - Relational Model: Authority Ranking (AR) - Risk: cheating, abuse, neglect
		(MP) (EM)	(AR) (CS)
	Deep	Corruption embedded in work relations between peers - Relational Model: Equality Matching (EM) - Risk: poor coordination	Corruption embedded in friendship or kinship relations - Relational Model: Communal Sharing (CS) - Risk: misanticipation

Subsequently, it develops a key proposition on how these role structures are expected to change as a consequence of changing institutional embeddedness (in this case, decentralization in Indonesia, starting in 2001).

Relational embeddedness: four relational models

The relational dimension of embeddedness refers to the content of a tie. Given that corrupt transactions are inherently risky, a general prediction of embeddedness theory is that the involved parties will try to limit the risk of detection or defection by selecting exchange partners whom they can trust, either because they have a kinship or friendship tie, or a hierarchical power relation that ensures compliance of the dependent party: "The opportunity for corrupt exchange stems from an already existing social tie" (Lawler and Hipp 2010). According to *relational model theory* (Fiske 1991), any relationship can be understood in terms of two more general latent dimensions which define all types of social exchange to a stronger (deep) or lesser (shallow) extent. *Relational Depth* or commitment reflects the degree to which exchanges are restricted to the goods or services in question (shallow), or exchanges are wider and also constrained by social obligations (deep). The dimension of *Interdependence* captures to what degree each party's actions can have repercussions for the other. Each of the four resulting elementary types, shown in Table 1, comes with a specific bundle of expectations, rules, and norms but also risks (Fiske 1991, 1992) relevant for modeling the structure of corruption networks. It should be noted that whereas one of these models may be in the cognitive foreground in a given situation, the other models are likely to play a role in the cognitive background.

We give a succinct overview of these four types, summarizing the work by Fiske and other scholars. In *non-embedded* corrupt exchanges, transactions are characterized by shallow relational depth because exchange parties are not constrained by strong social obligations. Nevertheless, non-embedded corrupt exchanges can involve both shallow and deep interdependence, depending on the stakes and the degree to which participants are locked in the exchange with a particular partner. The relational model

underlying these transactions is *market pricing,* in which a pure profit motive guides the cost–benefit calculations of those involved. The main risks in such exchanges are cheating, unreliability and indiscretion. 'Deterrence' can keep both parties in the relationship.

Authority Ranking is the relational model governing corrupt exchanges within supervisor-subordinate dyads in bureaucratic hierarchies. It comes with the exercise of command and complementary displays of deference and respect. Authority ranking is characterized by shallow relational depth because the lower ranking party's behavior is a response to the other party's power position (and thus is unlikely to occur in the absence of an authority relation). For example, trustworthiness of the powerful depends on their willingness to honor their commitments towards the dependent party, whereas trustworthiness of the latter is not a real issue for the powerful player, given the available sanctioning power that allows them to force a subordinate to comply with a request (Bendahan et al. 2015; Rosenblatt 2012). Authority ranking is also characterized by deep interdependence because the more powerful party will invoke their authority if they themselves attach value to the action requested from the subordinate (Ryan and Blois 2016: 37) Hence, whereas abuse and neglect by the more powerful player are the main potential risks for those in the dependent position, the latter also have some leverage over the former, since some degree of compliance is required to realize the outcome desired by the more powerful party.

Informal *work relations* among peers in bureaucracies may breed collusion or conspiracies among individuals occupying similar positions in the hierarchy (Gong 2002; Zimmerman 2001). The relational model governing corrupt exchanges embedded in informal work relations is *equality matching* in which people are distinct but equal, as manifested in balanced reciprocity (or tit-for-tat revenge), equal share or identical contributions, in-kind replacement compensation, and turn taking (Fiske 1991). Unlike Market Pricing relations, Equality Matching usually is based on repeated interactions, thereby involving a shadow of the future. As a result, relational depth is higher than in Market Pricing relations. But like the latter, Equality Matching can be based both on shallow or deep interdependence. Their main risk is poor coordination. Previous scholars have stressed the potentially self-reinforcing character of such collusive cliques (Tirole 1986). Particularly in public administrations, where long-term relations can be built up due to life-long tenure, the potential for mutual blackmailing creates a powerful incentive for not betraying the clique.

Finally, corrupt exchanges embedded in *kin- or friendship* relations represent the prototypical roots of favoritism (Smith 2001; Lesné and Gauthier 2014). Their relational model is Communal Sharing, in which a sense of unity, community, undifferentiated collective identity, and kindness govern the exchanges (Fiske 1991). Due to the combination of strong moral obligations and affection, these social bonds are important sources of interpersonal trust, which is a key ingredient for covert illicit transaction. This model is also rooted in deep interdependence. Since foresight and empathy are key elements of trustworthiness, its main risk is misanticipation.

Structural embeddedness: three types of third-party intermediaries

With respect to the structural embeddedness, three types of third-party intermediaries (Burt 1992; Coleman 1990) can be distinguished. *Guarantors* are individuals considered

trustworthy by two potential exchange partners who do not know whether they can trust each other (Coleman 1990: 180–186), but between whom there is no authority relation that would allow one of the partners to force the other. The network configuration is an open triangle, with the guarantor occupying the intermediate position. The availability of a guarantor can considerably facilitate corruption. First, there may be situations in which the bribe taker does not intend to directly connect to the briber. The guarantor may then be the only way to connect. Guarantor-mediated corruption may be particularly attractive for top-level bureaucrats, because they are in the position to delegate the exchange to guarantors. Second, the guarantor might be needed to provide information on procedures or requirements related to the transaction. A briber might not know which public officials are open to corruption, or how large the bribe should be (Lambsdorff 2002). Therefore, external parties may rely heavily on guidance from guarantors.

Advisors can be safeguards for risky transactions. Unlike in the guarantor case, where the exchange is carried out through the intermediary, advisory trust relations imply that the two exchange parties enter a direct exchange based on the positive advice of the third party, whom both trust (Coleman 1990: 180–186). The network configuration is a closed triangle. The resulting closed social structures foster monitoring and informal social control, conditions that in turn enhance mutual trust and generalized exchange (Uehara 1990).

Facilitators occur in situations where intermediaries may not benefit directly from their brokerage efforts or would not enter them voluntarily. They are positioned between the two exchange partners and are the intermediate party in the illegal exchange. The network configuration is a directed two-path in the authority structure; the network structure may be open or closed with respect to information and further social embeddedness. This type of intermediary may occur in particular in situations where high-level public officials constrain their subordinates to get involved in an illicit transaction, such as negotiating on the behalf of their superior.

Table 2 summarizes the similarities and differences between the three types of intermediaries.

Institutional embeddedness: the impact of decentralization on role structure change in corruption networks in Indonesia

For the institutional embeddedness we consider the particular case of our research in Indonesia. Having been a centralized state for more than 3 decades, in 2001 the Indonesian government decided to decentralize, transferring many decision rights and resources for local development and service delivery to local governments (Lewis 2010). Decentralization was implemented in two phases. The first (2001–2004) was marked by the introduction of a system of representative democracy, which gave the local legislative (local council) the power to select and remove the local executive (head of region and his deputy). The local legislative also held considerable control rights over the local executive's decision-making process.

The second phase (since 2005) saw the introduction of a system of local direct democracy that allowed citizens to directly elect the head of region. This significantly decreased the latter's dependence on the local council, and increased accountability to the electorate. The change came with new checks and balances, resulting in a less powerful local

Table 2 Characteristics of the third party in corruption networks

	Facilitator	Guarantor	Advisor
Structure of the network	Open or closed	Open	Closed
Position of third party	Fully inside the chain of command within the boundaries of the public sector (lowest–middle–top-level officials)	Public official or private actor	Public official or private actor
Role of third party	Accomplice of the superior	Acts as a guarantee (i.e. the transaction goes solely through the third actor)	The third party connects the other actors, but the other parties are also connected to each other
Profit for third-party services	No direct profit (e.g., monetary payment) for third party from higher-level official (i.e., unreciprocated profit transfer)	Yes, e.g., as a broker, receives profit from the private actor and at the same time, receives transfer profit from client to top-level official in exchange for policy approval/project	Yes, gains profit (monetary payment) as a reward from external party who needs information and other services related to the transaction
Relational model	Always authority-ranking relation (AR)	Can be communal sharing, equality matching, market pricing, or a combination of these	Can be communal sharing, equality matching, market pricing, or a combination of these

council and a more even balance of power between the local legislative and executive. Institutional attempts to strengthen regional autonomy also had an impact on the duties of civil servants in the regions (Tjiptoherijanto 2008), as they gained more responsibilities in providing services to inhabitants.

Along with the second-phase shift of formal power from local legislative to local executive came different structure of opportunities for different actors to enforce personal or group interests in public decision-making processes. This led to increased opportunities to abuse power, including incidents of corruption by local public officials.

The role structure in changing institutional contexts affects the strength and type of dependence relations between exchange partners. In the present case, this requires a closer look at how the institutional framework before and after the decentralization in Indonesia affected relational and structural embeddedness. Since decentralization resulted in a significant reallocation of administrative power, the kind of role structures that were dominant in the first phase are likely to be different from those in the second phase. One change deserves particular attention.

The first phase reflected a transition from decades of autocratic and centralized rule. The institutional structure was characterized by deep dependence relations. The main driver of corruption was the existence of power relations in the bureaucratic hierarchy. Rather than being an instrument for risk management, third-party embeddedness, if present, was likely to consist of facilitators who were part of the command chain. The *de jure* relationship between the local council and local executive was one of equal power. De facto the local executive's accountability toward the council fostered the development of a patronage system, allowing the local council to constrain the head of region to participate in illicit deals.

The second phase of decentralization brought a different allocation of power and strengthened the power and discretion of the local executive vis-à-vis the council, but

it also increased the discretion of the senior civil servants vis-à-vis the local executive. This transformed the relation between the local executive and local council from deep dependence to shallow interdependence. Overall, the different allocation of power and discretion triggered by second-phase decentralization resulted in a shift from deep dependence to both more shallow and more mutually interdependent relationships. This has two implications for change in role structures.

First, it implies an increase in the proportion of role structures involving shallow (i.e., non-embedded and work), and interdependent (i.e., kin- and friendship, work) relationships. Since deep dependence relations will not disappear (civil servants, executive and council are still part of an administrative hierarchy), this change is likely to lead to a higher proportion of compound role structures *(compoundness proposition)*, i.e., role structures where of the three embedded types (work, kin- and friendship, authority), more than one is present.
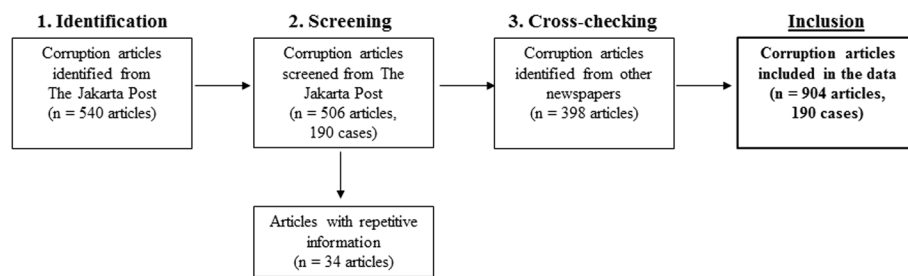
Second, the incidence and type of third-party embeddedness are also likely to change, due to the different types of risks associated with dependence and interdependence. Specifically, due to their effectiveness as structures of social control, closed third-party structures have been found to be particularly effective to manage trust problems in situations of interdependence (Coleman 1990). In contrast, players in power positions are less dependent on third-party intermediaries, but they can increase their payoffs either through invoking their chain of command, or through 'brokering' between otherwise disconnected partners (Lazega and Burt 1995). Hence, the relative increase in interdependence relations is likely to be accompanied by a higher proportion of role structures with closed third-party intermediaries (advisors or closed facilitator structures) *(intermediary proposition).*

Data and method

Data collection

Sociometric data were collected on all cases of corruption occurring in Indonesian local governments published in The Jakarta Post in the period 2001–2013. The number of cases was 190. The newspaper reports provide detailed information on the structure of corruption networks (e.g., type of actor, type of relations, and type of corruption). Many are based on publicly available court files.

Since the actual incidence of corruption is unknown and these cases are all instances of detected corruption, this sample cannot be used to produce a fully representative picture of the hidden universe of corruption networks in Indonesia. In fact, these cases may over-represent those corruption networks that, maybe due to internal frictions and unstable relationships, failed to keep illicit exchanges secret and thereby favoring their exposure. As a result, the sample of corruption cases analyzed here may in fact only reflect specific forms of corruption that say little about the structure and processes in the hidden cases that were not detected. However, it offers the opportunity to explore variability in the social-structural foundations of these corruption cases in the two phases of decentralization.

Fig. 1 Corruption articles selection processes

The Jakarta Post is a leading online English-language newspaper published daily in Indonesia. It also covers corruption cases at the regional level. A case reported in The Jakarta Post has some importance, and thus it is highly likely that other newspapers will cover it. To start sampling from local newspapers would have created two problems: first, their quality is not always assured and second, the opportunity to cross-check with other newspapers would have been lower, since not all cases may make it into the media outside the local setting (because a case might be considered 'minor'). To minimize data selection bias and ensure the consistency of the reported information, the reported cases in The Jakarta Post were cross-checked with information from other reliable national and local newspapers that belong to the same and different media groups with The Jakarta Post.

The newspaper data were also cross-checked with report documents from the General Attorney Office and Corruption Eradication Commission. Compared to the court verdict reports, the newspaper reports sometimes gave more details related to the actors' network and the transaction processes, salient information for reconstructing the corruption network in this study.

Two time periods for comparison were used: corruption cases in the first phase (2001–2004) and in the second phase of decentralization (2005–2013). To reduce potential selection bias between two phases, we included all reported corruption cases from both periods.

Newspaper data collection was completed in three stages (see Fig. 1). We first identified and collected articles related to corruption cases at local levels as reported in The Jakarta Post. We recorded the individuals (e.g., a mayor) or groups of individuals (e.g., local council) involved in corrupt transactions. We apply a broad definition of public corruption, including bribery, embezzlement, bid rigging, fraud, kickback, graft, favoritism, nepotism, and money laundering.

The search produced 540 articles. In a second step, we reviewed the content of articles, removed articles that merely repeated news and listed the articles in order of corruption case, so that we could calculate the total number of corruption cases covered in The Jakarta Post in the selected years. This check identified 34 articles with repetitive information, which were removed from the collection, resulting in a total of 506 articles, covering a total of 190 corruption cases. Of the 190 corruption cases in our dataset, 96 cases occurred in the first phase (2001–2004) and 94 cases in the second phase of decentralization (2005–2013). In a third step, cross-checks of

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reported information from The Jakarta Post with other newspapers resulted in the inclusion of 398 related articles. In total, the search yielded 904 articles.

Measurement

Three levels of analysis are distinguished: actor, dyad (i.e., pair of actors), and the corruption case or network. Actors can belong to multiple dyads. For a case in which n actors are involved, there are $n(n-1)/2$ dyads, and each actor is involved in $n-1$ dyads.

Based on four types of relations mentioned below, a network of corruption was constructed for all 190 cases. For each corruption case and each type of relation, we derived a binary sociometric containing information about the tie between each individual sender and receiver in the network, with a value of '1' indicating a tie originating from the sender (row) to the receiver (column), and '0' indicating the absence of a tie. The diagonal of each matrix (which would have referred to self-ties) was coded as 0 without any intended meaning.

A tie was coded as a *profit* relationship if the texts indicated some transfer of benefits (material payment, information, rights, protection, project, and support) from a sender to a receiver. Since unreciprocated transfers were possible, ties could be either symmetric or asymmetric.

A tie was coded as an *authority* relation if two individuals in the bureaucracy were connected through a formal power relation. This relationship is asymmetric by definition, with the cell entry "1" indicating "sender is superior of receiver".

Work relations were coded if two individuals are peers in a bureaucratic hierarchy (e.g., both members of the same department). This relationship is symmetric by definition. Authority and work relations are both situated in an organizational setting (in this case, government bureaucracy).

The final category groups individuals connected through either a *kin-* or a *friendship* relation, which also were coded as symmetric.

The combination of these four relations constitutes a *multivariate network* (Wasserman and Faust 1994) where the relations are profit, authority, work, and kin/friend, of which by definition the last two are symmetric and authority cannot be mutual; further, authority and work are mutually exclusive relations. The data set was analyzed with R programme and scripts written specifically for this study.

Actor and dyad-level descriptive

The 190 cases have a total of 1960 actors. There are 33 cases of only two actors, 35 with three, 29 with four actors, and then it starts to taper off; the three largest cases have 48, 76, and 100 actors, respectively.

The total number of dyads is 28,725. The type of a dyad, considered as an ordered pair, is the combined configuration of the four types of relations: non-embedded corruption (in, out, or mutual), authority (null, in, or out), colleague (null or mutual), and kin/friend (null or mutual).

Table 3 Dyad count aggregated over all cases

	Non-embedded profit relation	Work relation	Kin/friendship relation	Authority relation	Any
Profit unilateral	0	15	30	530	575
Proportion of cases	0.000	0.021	0.137	0.637	0.674
Profit bilateral	420	10,490	49	296	11,255
Proportion of cases	0.484	0.226	0.168	0.126	0.754
Any	420	10,505	76	826	11,827
	0.280	0.247	0.221	0.684	

Proportions of cases indicate proportions with any of the dyad types present

When considering the unordered dyads there are 20 logically possible configurations,[1] of which 14 actually occurred, and seven in more than 0.1% of the dyads. There were 11,827 dyads with a transfer of profit. There were three dyad types occurring in only one case, in each of which kinship/friendship co-occurred with work or with authority. To prevent an overly complicated classification, these co-occurrences were grouped under the kin/friendship category. This leaves seven dyad types with profit transfer: (1) non-embedded bilateral profit; unilateral profit with (2) work, (3) kin/friend, and (4) authority; and bilateral profit with (5) work, (6) kin/friend, and (7) authority.

Table 3 provides the dyad count of these seven dyad types and the proportion of cases in which any of these dyad types is present. This represents aggregates of the multivariate dyad census, after the grouping mentioned above, for dyads with unilateral or bilateral profit transfer. The total dyad count is dominated by the networks with large numbers of actors; therefore, the proportions of cases including a given dyad type were added. From this table the following conclusions can be drawn. It is noteworthy that unilateral profit never goes in the direction opposite to authority; not surprising, but a confirmation of the power of authority in a bureaucracy. The dyad type with the largest number, 101,490, is for work relations with bilateral profit; this large number is dominated by contributions from nine cases with each more than 100 dyads of this type, all in the first phase. However, the dyad types occurring in the largest proportions of cases are unilateral transfers of profit in an authority relation (0.637) and non-embedded bilateral profit relations (0.484). Bilateral profit exchange dyads occur in 75.4% of the cases and dyads with unilateral profit transfer occur in 67.4% of the cases. Most cases (68.4%) contains dyads in the context of an authority relation.

Analytical strategy

The main purpose of the analysis in this paper is to examine the differences between the first and the second phase of decentralization from the viewpoint of the two theoretical propositions presented above. The *compoundness proposition* stated that in the second

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[1] Authority cannot go together with work (colleague), therefore the combinations of authority and work have three possible dyads null, asymmetric, and mutual, where asymmetric means authority and symmetric (mutual) means work. For combining profit and authority and work this implies $3 \times 3 = 9$ possibilities. However, the asymmetric dyads can go in the same or in opposite directions, adding a tenth possibility. This is then combined with the two values for friend/kin. Because these are symmetric and can have any combinations with profit, authority, and work, the grand total is $10 \times 2 = 20$.

Table 4 Twelve groups of role structures

P	Only reciprocal profit
A	All dyads combine authority and profit
W	All dyads combine work and reciprocal profit
K	All dyads combine kin/friend and profit
PA	Some dyads combine authority and profit, others are only reciprocal profit
PK	Some dyads combine kin/friend and profit, others are only reciprocal profit
AW	All dyads combine profit with work and/or with authority
AK	All dyads combine profit with kin/friend and/or with authority
PAW	Some dyads combine work and profit, others combine authority and profit, still others are only reciprocal profit
PAK	Some dyads combine kin/friend and profit, others combine authority and profit, still others are only reciprocal profit
AWK	Some dyads combine work and profit, others combine authority and profit, still others combine kin/friend and profit
PAWK	Some dyads combine work and profit, others combine authority and profit, others combine kin/friend and profit, still others are only reciprocal profit

phase there will be a higher proportion of compound role structures, i.e., role structures where of the three embedded types (work, kin- and friendship, authority), more than one is present. The *intermediary proposition* was that the second phase will see a higher proportion of role structures with closed third-party intermediaries (advisors or closed facilitator structures).

For a comparison between the two phases, the analysis has to move from the dyad level to the network level, which is equivalent to the case level. To bring some order in the multitude of these multivariate networks, we construct a classification of the networks depending on the embeddedness in work, authority, and kin/friend relations, and the presence of third parties. We first define the role structure of the network as the *set of profit-related dyad types* occurring in the network. In other words, we focus on the seven dyad types with profit transfer mentioned above, and categorize the cases according to which of these seven occur in the given case. The number of theoretically possible role structures is the number of non-empty subsets of the set of seven dyad types, which is $2^7 - 1 = 127$. We reduce this further according to the presence of the four types of relation (work, authority, kin/friend, and profit), as indicated in Table 4.

Second, we consider the presence of third parties by distinguishing between networks consisting of only two actors (no third party) and those consisting of three or more (third parties present; grouping together the three different third party types: guarantor, advisor, facilitator). The twelve groups of role structures can be combined with the presence of third parties; it is evident that for the role structures defined in Table 4 by "some dyads ..., others ...", third parties are present by definition.

Non-compound and compound role structures need to be distinguished. The first set of six role structures (rows 1–6) in Table 4 are non-compound, representing 'pure' (or uniplex) profit, or profit combined in this case with only authority, or only kin/friend, or only work relations. To illustrate: the structures in row 1 (P) consist of uniplex ("pure" or non-embedded) profit relations, i.e. the only resource that flows between the exchange partners consists of goods or services. The minimal unit in this class is a network consisting of one mutual profit tie (isolated unilateral profit ties do not exist in the data). A

network with more than two actors who all are connected only by profit ties falls in this category but with third parties present.

Role structures in rows 2–6 represent cases in which a profit relationship occurs together with exactly one of the other types of relationship. In row 2 (A), all dyads are connected by authority and by a profit tie, where the profit may be mutual or unilateral; in the latter case, the direction of profit is opposite to the direction of authority; furthermore, none of the dyads are linked through a kin/friendship or work relation. Examples of role structure A are a case consisting of one dyad (no third party present) in which profit flows from a subordinate to a superior; and a case consisting of a chain of command, in which an actor has formal authority over another actor, who in turn has formal authority over a third party. Role structures W and K are similar, but now for the work and kin/friend relations, which are symmetric by definition. An example of role structure W with a third party is a triad in which profit flows from the agent to the client via the third party who has a horizontal work relation with the agent. Examples for role structure K with a third party, as proposed by Coleman (1990), are: (1) a guarantor structure in which the trustor has an informal tie to a third party, the third party has an informal tie to the trustee, and profit is transferred from trustor to the third party and from the third party to the trustee; (2) an advisor structure, which resembles the guarantor structure, but there is also a direct relation (e.g. profit) between trustor and trustee. Role structure (PA) is like structure (A), but in addition there is at least one dyad without an authority tie but with mutual profit exchange. Similarly, role structure (PK) is like structure (K), with in addition at least one dyad with only mutual profit exchange.

The remaining types contain compound role structures. A role structure is compound if it contains more than one type of relational model, comprising two, three, or four combinations of relations (Fiske 2012). This means in our study that of the relations authority, work, and kin/friend, two or more are present, in addition to the profit relation. This presence can be multiplexity within the same dyad (e.g., a tie in which two kin actors have an authority relation and are involved in a corrupt exchange), or to concatenations of different types of ties across different pairs of actors, e.g., when two exchange partners are linked by a power relationship, and both are linked to a third party through a kin- or friendship relation. The most complex role structure is the compound (PAWK) combining all four relations of authority, kin-/friendship, work, and profit.
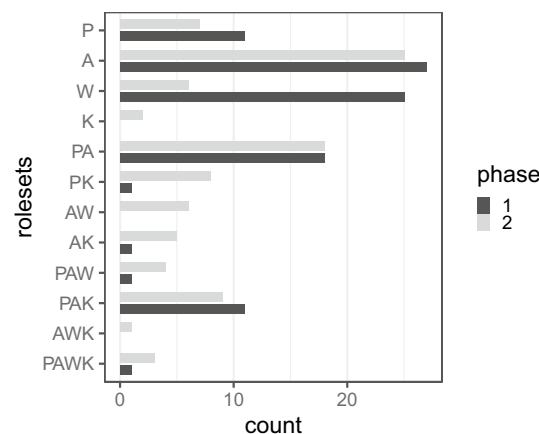
Role structures: descriptive results and case illustrations

Of the 127 theoretically possible role structures, 29 occur among the 190 cases.

The frequencies of the twelve groups of role structures for Phase 1 and Phase 2 are displayed in Fig. 2.

It provides several important insights. First, it shows the tremendous importance of role structures built around or containing authority relations. Corruption embedded in a hierarchical authority relation in the bureaucracy is present in 68% of the cases, making authority ranking the most frequently occurring relational model in corrupt social structures. By far the largest proportion of cases, 27% (or 52 of 190), consists of role structures of the authority type (A), i.e., they are based solely on combinations of authority ties and profit ties.

Fig. 2 Graphical representation of distribution of role structures in Phase 1 and Phase 2

Second, only 9% of the cases represent role structures of non-embedded profit relations. This finding is in line with the key assumption of the social embeddedness approach, according to which risky economic exchanges rarely occur between complete strangers. In the 18 cases in this category, a private actor offers money in exchange for some kind of policy or project approval by government actors. Nevertheless, it needs to be stressed that dyads with pure profit transfer are also present in five embedded role structures (PA, PK, PAW, PAK, AWK) covering 39% of all cases. This means that non-embedded ("uniplex") profit dyads frequently co-occur beside a variety of embedded ties in a corruption case.

Third, what may come as a surprise, particularly in the light of recurring concerns about clientelism, is that corrupt transactions co-occurring exclusively with kin- or friendship relations are virtually absent (only 2 cases in total). But this does not mean that kin and friends should be discarded as being unimportant elements in corruption networks, since compound role structures including kin and friends still account for 21% of the cases. This indicates that kinship and friendship relations may still play a pivotal role in facilitating corruption and eventually in helping to build and maintain its underlying exchange structures.

Fourth, 16% of the cases consist of role structures in which profit transfers co-occur solely in concert with work relations between peers in the bureaucracy.

Fifth, the proportion of cases with compound role structures consisting of two or three relational models in addition to profit transfer is moderate, amounting to a total of 22% of all cases.

The frequencies of the groups of role structures, distinguishing between cases with and cases without third parties, is given in Fig. 3.

A clear pattern emerges: third parties are present in almost all cases with compound role structures or where mutual profit is combined with another relation, and in about half of non-compound authority structures (A). Other non-compound structures (P, W, K) have no, or almost no, third parties. A total of 57% of cases is characterized by a third-party role structure. This is a noteworthy finding, because it provides a systematic empirical ground concerning the presumed importance of

Fig. 3 Graphical representation of distribution of combination of role structures with presence of third parties

intermediary structures in corruption cases as suggested by earlier theoretical work and the anecdotal evidence accompanying it.

Before moving to the description of the differences in the frequencies of role structures between Phase 1 and Phase 2, we provide case illustrations of one prominent non-compound role structure (work) and one prominent compound role structure (authority, kin/friendship, profit). We also show the different kinds of third parties present in these cases.

Illustration of a non-compound model: corruption through work relations

In 16% of the cases (N=31) corruption was embedded solely in work relations. Most of these cases concerned the misuse of government budget (N=16) and took place in the first phase of decentralization (N=25). Except for one case, all cases involved local council members who embezzled government (council) budget and distributed profit among themselves.

Figure 4 shows a typical case in this category. This case also shows how a three-actor network does not necessarily contain an intermediary role, since all three in the network shared profit among themselves, without any one functioning as a facilitator, guarantor or advisor (see Fig. 4 case No. 8).

In the six cases that took place in the second phase of decentralization, the exchange relationship is different: the local council either exchanged money for policy approval from other officials, such as a governor, regent, and mayor, or these officials exchanged money for the council's approval (e.g., see Fig. 4 case No. 118).

Illustration of a compound model: corruption embedded in authority and kin/friendship relations

The most frequently occurring compound model is the authority, kin/friendship, and mutual profit (PAK) category (N=20). Of these cases, eleven took place in the first phase of decentralization. All but one cases in these configurations have one or more third parties as intermediary. The most dominant third party is the senior civil servant (N=19) who plays a role either as advisor or facilitator. Eighteen cases have an advisor present, and seventeen cases have complex networks involving multiple third parties. Below we illustrate the different third-party roles identified in the data.
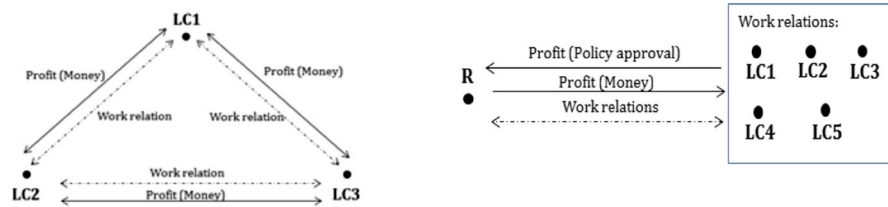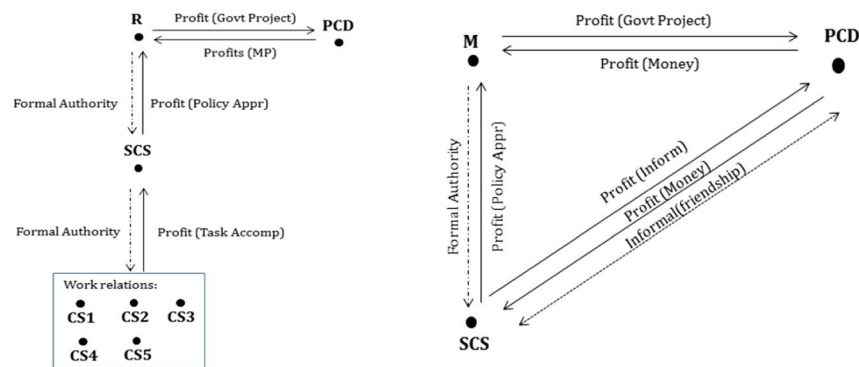
EXHIBIT 1: CASE NO. 8 - WORK RELATIONS PHASE 1   EXHIBIT 2: CASE NO. 118 - WORK RELATIONS PHASE 2

EXHIBITS 3: CASE NO. 74 ADVISOR   EXHIBIT 4: CASE NO. 151 – ADVISOR
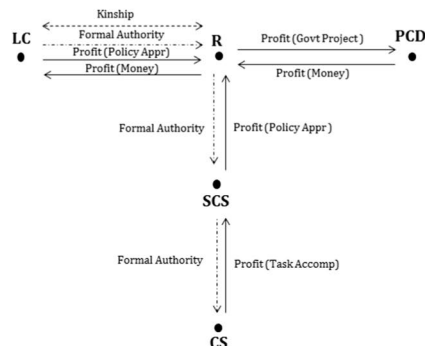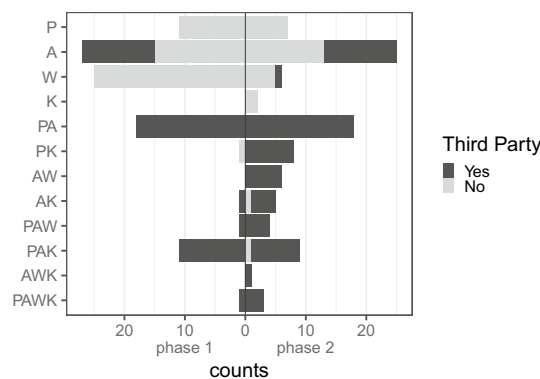

EXHIBIT 5: CASE NO. 58 EXAMPLE OF MULTIPLE THIRD PARTIES: FACILITATOR AND GUARANTOR

Fig. 4 Case examples of non-compound and compound role structures. Legend: LC: local council; R: head of region, R & M: head of region; SCS: senior civil servant; PCD: private actor; CS: civil servant. R: head of region; LC: local council; SCS: senior civil servant; CS: civil servant; PCD: private actor

As a *facilitator*, lower-level civil servants are forced by higher-level officials to execute the transaction; for example, Fig. 4, case No. 74. In this bid-rigging case between a local government and a private company (PCD), civil servants were forced by the head of region (R) to execute the transaction with the private actor as a facilitator. The senior civil servant (SCS) can be considered a facilitator between (R) and civil servant (CS). The subordinate acts as the powerful actor's accomplice. Lower-level civil servants do not often share in any direct profit from the exchange between the superior and private actor: they are simply forced to comply.

Fig. 5 Graphical representation of distribution of combination of role structures with presence of third parties, in Phase 1 and 2

The *advisor* is a typical instance of third-party social embeddedness enabling economic transactions between two previously unrelated parties, for example Fig. 4, case No. 151. Related to bid rigging in the development of a city road, this case has dyadic ties between the head of region (M) and the director of a private company (PCD). However, the senior civil servant's (SCS) role as an advisor is still needed to transfer information between (M) and (PCD). The private actor then transfers profit to the civil servant in exchange for information or relevant support. Figure 4, case no. 58, identifies both a *guarantor* and *facilitators* as third parties. As an *open guarantor*, the third party helps to enlarge the corruption network (and therefore potential payoffs), by connecting two otherwise disconnected actors. In the open guarantor role, the third party allows the briber and bribe taker to distance themselves from the transactions, which reduces the risk of exposure to external parties.

In case No. 58, the head of region (R) can be considered a guarantor between the local council (LC) and the private actor (PCD), because the only channel for the external party to gain access to the local council is via the head of region who has a formal organizational tie to the local council. This triad allows the local council to distance itself from the transaction and lower the risk of detection. At the same time, the senior civil servant (SCS) can be considered a facilitator between the head of the region (R) and the civil servant (CS). The senior civil servant has the strategic position to connect to the head of region, and at the same time they can force the lower civil servant to comply in the transaction.

Role structures: change

This section addresses whether the evidence is in line with the two propositions following from the overall prediction that the decentralization caused corruption networks to shift from deep dependence to shallow (work and pure profit relations) and interdependent relationships (work and kin/friendship).

Relational embeddedness

Figure 5 presents the changes from Phase 1 to Phase 2 for the twelve role structures and the presence of third parties. The findings are in line with the *compoundness proposition.*

Figure 5 shows a clear increase in the proportion of compound role structures (30% in the second phase), at the expense of non-compound ones. There is a clear decrease in the proportion of cases with simple role structures consisting only of a single relational model. The proportion of cases exclusively based on either authority, work, or mutual profit drops from 66 to 40%. The most notable decrease took place in the non-compound role structure of work (from 26 to 6%), followed by non-embedded profit relations. Both represent shallow (inter-)dependence relations. In comparison, the proportion of cases based on authority only dropped slightly, whereas it is in phase two that a small number of role structures based on kin- or friendship only appeared for the first time. Hence, deep (inter-)dependence relations remained important.

The proportions of cases with compound role structures remain fairly stable for PAK, AWK, and PAWK, and increase in the second phase for AW (0% to 6%), AK (1% to 5%) and PAW (1% to 4%). The compound models consist of a mix of authority relations with profit, work and/or kin/friend. In both phases, 19% of the cases consist of a combination of authority and mutual profit, implying that there were corrupt exchanges between government officials and external actors in the form of money or other resources in return for government favors.

Structural embeddedness

According to the *intermediary proposition*, decentralization is likely to trigger a proportional increase in role structures containing third-party intermediaries. The trends in the data are in line with this proposition. Two noteworthy patterns emerge.[2]

Changes in third-party role structures of corruption

We observe in Fig. 5 an overall increase of cases with third parties from 46% in phase 1 to 69% in phase 2, especially for compound role sets. There was an increase for Guarantors and Advisors and a slight decrease for Facilitators. Cases without third parties are almost totally restricted to non-compound structures based either on profit, authority, or work.

Two developments are particularly noteworthy. First, there is an increase in the proportion of complex compound role structures containing authority relations and third parties, in addition to work and/or kin/friendship. In other words: compared to the first phase of decentralization, corruption involving at least two parties of the administrative 'command chain' now co-occurs more often with illicit transactions between peers in the bureaucracy, and/or with kinship or friendship relations outside the bureaucracy. Neither of these two compound structures played a significant role during the first phase.

Second, a role structure that was virtually absent during phase one became prominent in the second phase of decentralization: the combination of non-embedded profit ties co-occurring with kin/friendship ties (PK), embedded in a third-party structure. This role structure represents corruption not involving a hierarchical relationship within the government bureaucracy, taking place between a member of the administration, their kin or friends, and a third-party intermediary. It seems that the second phase of

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[2] We also studied whether particular role structures related to particular kinds of corruption, but no patterns emerged from the data.

Table 5 Changes in frequencies and proportions of third-party roles at the case level

No	Third-party role	Number of cases	Phase 1	Phase 2
1.	Open facilitator	46 (24%)	12 (27%)	14 (22%)
2.	Closed facilitator	4 (2%)	2 (5%)	0 (0%)
3.	Open facilitator + guarantor	12 (6%)	4 (9%)	8 (12%)
4.	Open facilitator + advisor + guarantor	13 (7%)	10 (23%)	3 (5%)
5.	Closed facilitator + advisor + guarantor	1 (1%)	1 (2%)	0 (0%)
6.	Advisor	4 (2%)	0 (0%)	4 (9%)
7.	Guarantor	39 (21%)	15 (34%)	24 (37%)
8.	Guarantor + advisor	14 (7%)	0 (0%)	12 (2%)
	Total	109 (100%)	44 (40%)	65 (60%)

decentralization opened the door for a stronger involvement of kin and friends in corruption: the overall proportion of role structures containing kin- or friendship relations doubled, from 15% in phase one to 30% in phase 2.

Changes in third-party types

The second important change relates to the type of third-party intermediary (see Table 5). Overall, of the 109 cases with third parties, 26% have role structures with the *facilitator* as the only intermediary. This is a lower-level civil servant who is forced by a higher-level civil servant or government actor to facilitate the corrupt transaction.[3] The total proportion of facilitator role structures decreased from 66% in the first phase to 38% in the second phase. This reflects a decreased number of lower civil servants who volunteered or were forced to be involved in corrupt exchanges by top-level officials.

Role structures containing intermediaries of the *advisor* type are in total good for 29% of the cases. Most were senior civil servants who benefited from connecting the top-level officials with private actors, helping them in the transactions. The proportion of advisor role structures did not change much between the first and the second phase.

A full 21% of the cases reflect a role structure in which *guarantors* are the only intermediary present. Guarantors co-occur with other types of intermediaries in an additional 36% of cases.

In sum, the main third-party roles in the cases under investigation are facilitators and guarantors. Where external businesses and a government actor were involved, the guarantor role was most prominent, often accompanied by advisor roles—for the same or other actors. Where corruption took place in the government bureaucracy, the open facilitator role was most prominent. And it is the latter—corruption within the bureaucracy—that show the strongest increase from the first to the second phase of decentralization. Third party facilitators seem to play an important role in sustaining corruption within the relatively complex context of compound authority-based role structures that gained in importance during the second phase of decentralization.

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[3] Lower civil servants may not receive direct (e.g., material) benefits from the transactions. However, the rewards can be in the form of career advancement or protection from superior in future.

Discussion and conclusions

The delegation of power to an executive organ at local level in Indonesia strengthened the power position of the local executive, i.e., the heads of region and their (senior) civil servants. At the same time, many interdependencies inherent to the relation between the council, executive, and civil servants remained in place. For example, many decisions of the local executive may not be possible without the expertise and collaboration of a senior civil servant. The local executive's reduced dependence on the local council provided the opportunity to enlarge the scope of illicit transactions and initiate corrupt exchanges with a broader set of players both inside and outside the bureaucracy. Local executives became more attractive targets to be approached by external players looking for corrupt deals. The same holds for senior civil servants whose opportunities to become involved as intermediaries between private actors and the local executive increased.

From a social embeddedness perspective, the institutional change favored a gradual shift from corruption enmeshed in deep dependence power relationships (i.e., authority) to illicit transactions taking place in the context of shallow (i.e., non-embedded profit and work) and interdependent relations (kin/friendship and work). This shift had a profound impact on the social networks underlying corrupt exchanges. It triggered the proliferation of a wider variety of compound third-party role structures, at the expense of simpler corruption structures, some of which were illicit economic transactions embedded in kinship or friendship ties, and others which were anchored exclusively in authority relationships, either entirely within the bureaucratic hierarchy, or combined with a profit exchange with outside players.

Applying a role structure approach adds a long neglected though crucial dimension to the study of institutional change, network embeddedness, and corruption. Our findings resonate with the leads provided by one of the rare theoretical analyses of the informal structure of illegal markets (Beckert and Wehinger 2013), according to which the various risks inherent in illicit transactions (e.g., state prosecution) give rise to *over embedded* network structures. Considered a liability for 'legal' business (Uzzi 1996), the characteristics of *over embeddedness* are an asset for safeguarding illegal transactions: reliance on a small set of strong ties and simple, loosely coupled networks of isolated cliques. Their key feature is that they restrict the flow (and leaking) of sensitive information. This implies that corruption networks in general should be characterized by the prevalence of simple (i.e., non-compound) role structures with little third-party involvement. More complex networks and a higher degree of structural embeddedness are likely to emerge in 'ungoverned spaces' (Beckert and Wehinger 2013: 18): conditions in which the state has not enough authority to enforce compliance to formal regulations. The evidence of the present study is largely in line with this general argument. Both underline the strong impact of institutional governance arrangements on the social structures underlying illicit economic action.

Generally, the findings lead to a refined view on social embeddedness arguments. In the present sample, the proportion of cases containing illicit non-embedded *dyadic* economic exchanges was 48%). This figure is substantial when viewed in the light of embeddedness theory's general claim that risky economic transactions rarely take the form of shallow dependence, i.e., unembedded market pricing relations. However, when considering their role structure context, only 9% of the cases were structures without any

embeddedness (type P; see Fig. 2). This suggests that structural analyses restricted to the dyad or triad level that disregard the role structure context might underestimate the degree of social embeddedness of corrupt exchanges.

The findings concerning third-party intermediaries are less straightforward. Corruption cases characterized by shallow (inter)dependent relations in non-compound role structures (non-embedded profit and work) are less likely to contain third parties, compared to corruption cases characterized by compound role structures with deep (inter)dependent relations (kin/friendship and authority). Role structures staying entirely within the administrative bureaucracy (type A, Table 3) come both with and without third parties, but as soon as authority relations are combined with other relations (types PA, AW, AK, PAW, PAK, AWK, and PAWK), the involvement of intermediating third parties is almost certain.

The overall proportion of cases with intermediary role structures, as predicted, increased during the second phase of decentralization. However, contrary to the prediction that the second phase would see an increase in closed intermediary structures because these enhance the opportunities for social control, it was open structures that became dominant: of the 65 s phase role structures containing third parties, only 4 did not involve open structures. Specifically, the proportion of role structures with (open) facilitators decreased. Facilitators can be found predominantly within the boundaries of the governmental bureaucracy, where higher officials can put pressure on their senior civil servants to facilitate illicit transactions.

In contrast, third parties in corruption cases that cross government organizational boundaries are most likely to fulfill guarantor or advisor roles. Here, the leader, as a patron, and more importantly the private actor, as a client, needs the assistance of the third party. The advisor then operates as an agent arranging the exchange of resources between the two parties, transferring information, and executing the transaction. Compared to third party advisors connecting private actors to government officials, facilitators within organizational boundaries are less likely to benefit directly from the corrupt transactions.

The present study represents a first and necessarily incomplete attempt to explore the repercussions of institutional reform on the hidden social fabric behind corrupt transactions. Applying role structure analysis allowed us to discern shifts in network patterns at a level that would have gone undetected if the analysis remained at lower (dyadic or triadic) levels of aggregation. Though the foundations for deriving role structures and comparing them across different networks were laid more than 4 decades ago (White et al. 1976), the core ideas are intuitive and close to sociological key concepts. They have even found their way into social network analysis textbooks (Wassermann and Faust 1994), but they have rarely been used to investigate substantive research problems. Applying them remains challenging both theoretically and methodologically.

As far as methods are concerned, the present analysis remains descriptive in nature. The dataset contains the full population of discovered corruption cases that came under legal investigation. No significance tests were applied, and conclusions are based on interpretation of shifts in proportions. Some of the observed changes are small in terms of their absolute numbers, but nevertheless amount to sizeable shifts when analyzed in terms of changes in proportions. This holds in particular for the trend towards more

compound role structures, towards role structures containing more third party intermediaries, and towards role structures involving a larger proportion of kinship and friendship relations.

Another methodological limitation of the present study is the classificatory approach that was used to elicit role structures. Our classification describes which types of relations and types of third parties co-occur in a corruption network. Therefore, it is not possible to disentangle the different network patterns characterizing a particular class of role structures. The formal method that would be required to elicit these patterns, homomorphic reduction (Wasserman and Faust 1994), could not be applied due to data constraints. Our theoretical analysis requires to distinguish between a large number of relevant dimensions: four relational models and their multiplex combinations; four types of intermediary structures and their combinations; symmetric and asymmetric relationships. The resulting number of possible and empirically realized configurations is huge, precluding a meaningful data driven elicitation of role structures.

Regarding theory, applying role structure analysis requires strong and necessarily simplifying assumptions about the comparability of relational content and structure. The present study combined relational model and brokerage theories to derive a set of theoretically possible role structures. Though the resulting framework proved fruitful and yielded meaningful results, other perspectives on characterizing relational content and structure are of course possible and may lead to other conclusions. Tractability of the underlying social mechanisms constitutes another theoretical challenge (Martin 2003). The impact of relational social network characteristics—such as density or centralization—on individual decision making and behavior are reasonably well understood. The same cannot be said for the characteristics of role structures (Wittek 2001), their causes, correlates and consequences. For example, is there an association between specific role structures and the volume or monetary value of transactions? And could it be that some role structures are better able to safeguard the level of secrecy and compliance that is necessary to avoid detection?

Finally, future research might benefit from paying closer attention to a specific intermediary role that was not considered in our study: third party *enforcers.*[4] Unlike mere intermediaries, who may be able to facilitate illicit exchanges due to their central role in an information network, enforcers are not only in the position to initiate and broker deals between other parties, they also have the power and resources to monitor and sanction non-compliance. That is, they sell protection, not information (Barzel 2001; Gambetta 1993; Della Porta and Vannucci 2016).

What may our study of the Indonesian case teach us to better understand decentralization and corruption in other countries? The Indonesian case is quite unique in terms of the ambition, scope and pace of decentralization. One should therefore refrain from direct extrapolations from the Indonesian case to decentralization initiatives and their impact on corruption patterns in other countries. Nevertheless, where our study might be of broader use, also for future research, is through its conceptualization of corruption networks as role structures that may co-evolve with changes in the institutional

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[4] We are grateful to an anonymous reviewer to make us aware of this phenomenon, and for suggesting the "selling protection, not information" metaphor.

structure (in our case the shifting power balance between local councils and heads of regions). Role structures allow not only within-country temporal comparisons, but also between-country comparisons. This approach therefore can in principle be used to test our *democratizing corruption* hypothesis also in other national contexts.

Indonesia's good governance reform may have successfully tempered the strong power position of key players in the bureaucracy. However, while it crushed the local council's monopoly on illicit transactions, the waning of deep dependence relations also democratized corruption.

Availability of data and materials
The data that support the findings of this study are available from the corresponding author (Mala Sondang Silitonga) upon reasonable request.

Declarations

Ethics approval and consent to participate
I serve as the corresponding author for this manuscript. All co-authors in the byline have agreed to the citation order in the byline and to submission of the manuscript in its current form. I have assumed responsibility for keeping my co-authors informed of our progress through the editorial review process, the content of the review, and any revisions made.

Competing interests
The authors certify that the current study has not been published in any form, and is currently not under consideration elsewhere. My co-authors and I do not have any interests that might be interpreted as influencing the research.

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